this invention correspond with those observed under daylight. Referring to Table 2, for instance, the dark blue color of the specimen had an order of brightness of 5 when it was observed using the light source device of this invention and was thus in agreement with that observed under the daylight. When observed using the conventional light source device, however, the order of brightness was 3 which was not in agreement with that observed under the daylight.

This indicates that the colored aluminum cannot be properly examined with a conventional light source device. The light source device of this invention, on the other hand, makes it possible to examine the specimens and obtain valid results.

(2) Comparison of vividness of the specimens:

In examining a specimen for vividness of the color, colors of the specimens are usually visually observed with reference to colors of standard samples which have been prepared beforehand. Standard samples in the form of coated plates of hues of the colors of the specimens were therefore prepared using a color chart and which had no directivity of reflection and on a chroma scale consisting of five grades by changing the vividness little by little in the same hue from a high degree of chroma to a low degree of chroma. Observation of the five colored alumimun specimens and the standard samples which had no luster or directivity of reflection, gave the results that are shown in Tables 4 and 5 below. The chroma scale was divided into five grades, i.e., 1, 2,–5, starting from the lowest grade of chroma, and the highest grade of chroma was denoted by the grade 5. The vividness of the specimens were observed using each of the light sources to determine the grade of chroma of the specimens.

TABLE 4

Color of colored aluminum specimen	Conventional light source	Light source of this invention	Daylight
Dark blue	Grade 2	Grade 4	Grade 4
Pale blue	3	5	5
Yellow	3	5	5
Yellowish red	3	5	5
Red	1	3	3

TABLE 5

Color of coated plate standard sample	Conventional light source	Light source of this invention	Daylight
Blue	Grade 3	Grade 3	Grade 3
Yellow	3	3	3
Red	4	4	4

For the coated plate standard samples having no luster and no directivity of reflection, the chroma grades observed under the two light source devices were in agreement with those observed under the daylight condition. For the colored aluminum specimens, however, the chroma grades observed using the conventional light source were not in agreement with those observed under the daylight condition. Using the light source device of this invention, however, the chroma grades of the colored aluminum specimens were in agreement with those observed under the daylight condition. With reference to Table 4, for instance, the dark blue had a chroma grade of 4 under the light source device of this invention and was in agreement with the grade determined under the daylight condition. This color, however, had a grade of 2 under the conventional light source device, which was not in agreement with the grade determined under the daylight condition; when using the conventional light source device, the chroma grade appeared to be shifted toward the lower grades, and the true vividness appeared to be lacking.

As described above, with the conventional light source device, the brightness and vividness of the colored aluminum specimens appear differently than what is usually seen under the daylight conditions. Therefore, using the conventional light source device, the observation of the brightness and vividness of colors gives incorrect results. Using an integrating sphere type standard light source device according to this invention, on the other hand, makes it possible to obtain correct results the same as when the colors are seen in daylight conditions.

What is claimed is:

1. An integrating sphere type standard light source, comprising: a spherical shell having the inner surface coated with a white coating having a high reflectivity, said shell having a light source aperture in the top thereof, a viewing aperture in the side thereof and a specimen exposure aperture in the bottom thereof; a light source means mounted in said light source aperture and depending into said shell and including a source of light and a light shielding plate between said source of light and the remainder of the interior of said shell, said light shielding plate being coated with a white coating having a high reflectivity; a specimen supporting plate beneath said specimen exposure aperture and normally positioned for supporting a specimen at the bottommost point of an imaginary spherical surface which is an extension of the internal surface of said shell into said specimen exposure aperture; and means on which said specimen supporting plate is mounted for moving said specimen plate into and out of the normal position thereof for placing a specimen to be observed on said specimen supporting plate.

2. An integrating sphere type standard light source as claimed in claim 1 in which said white coating is barium sulfate.

3. An integrating sphere type standard light source as claimed in claim 1 in which said light source means further comprises a cover fitting over said light source aperture, said light shielding plate being spaced inwardly of said shell from said cover and a pole connected between said cover and said shielding plate, said source of light being on the upper surface of said shielding plate.

4. An integrating sphere type standard light source as claimed in claim 3 in which said cover has a handle on the top thereof.

5. An integrating sphere type standard light source as claimed in claim 1 in which said source of light comprises a plurality of lamps each emitting a different type of light, and light shields on said light shielding plate between respective ones of said lamps, said light shields being coated with a white coating having a high reflectivity.

6. An integrating sphere type standard light source as claimed in claim 5 in which said lamps are a D_{65} lamp, a tungsten incandescent lamp, and a black light lamp.

7. An integrating sphere type standard light source as claimed in claim 1 in which said viewing aperture is at the end of a diametrical axis of said sphere which is perpendicular to a diametrical axis between said light source aperture and said specimen exposure aperture.

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